

Remarks

Applicant has carefully considered the Office Action issued in respect of his above application, as well as the prior art relied upon by the Examiner for his objections to the patentability of the invention, and his response is set out hereafter.

The Brief Description of the Drawings has been amended to refer to Figs. 1 and 2 as prior art, thereby overcoming the objection to the specification. Currently, claims 1-3, 5-21, and 26-34 are pending in this application. Claims 26-33 have been allowed. Claims 1, 11-13, 20, and 34 have been amended. No new matter has been entered.

Amended independent claim 1 generally recites a recognition force microscope that obtains topographical and spatial images by measuring and recording the amplitudes of the upward and downward swings of the probe tip during oscillation wherein the probe operates with a low mechanical Q factor. Similarly, amended claim 13 recites a recognition force microscope which determines topographical and spatial images by measuring the upward and downward swings, and utilizes a means for measuring and recording the upward and downward displacement of the probe tip as a function of time that comprises a radiation source directed at the probe, a position detector for the radiation reflected, and a processor that process the detected radiation signals. Amended independent claim 20 recites a method of operating a microscope that obtains topographical and spatial images by measuring the amplitudes of the upward and downward swings of the probe tip during oscillation wherein the probe operates with a low mechanical Q factor. Amended claim 34 recites a microscope comprising a time varying magnetic field which causes a probe to oscillate, wherein the average and peak amplitude of the probe is recorded during oscillation to simultaneously obtain topographical and spatial information. None of the cited references (Wong (Nature 1998), Doris (US 5,383,354), or Han (Appl. Phys Lett. 1995), teach or suggest the presently-claimed subject matter.

For example, Wong (Nature 1998) greatly differs from the presently claimed invention in the method and apparatus used in obtaining topographical and spatial images. As recited in the claims, the microscope obtains topographical and spatial images by measuring the upward and downward displacement of the probe tip during oscillation. The probe utilizes a low mechanical Q factor to ensure the independence of the upward and downward swings of the probe tip during oscillation. Wong fails to disclose operation of a probe using a low mechanical Q factor, and does not recognize the relationship of a low mechanical Q factor to the maintenance of

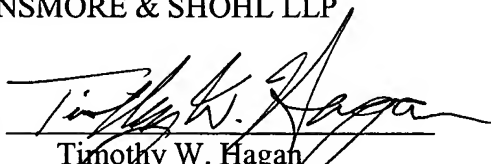
independent upward and downward probe swings. Furthermore, Wong does not teach or suggest any method or apparatus which uses the upward and downward displacement of the probe to simultaneously obtain topographical and spatial information. Wong operates by measuring and recording changes in phase associated with the damping of the cantilever oscillations.

The secondary references, Doris and Han, fail to remedy the deficiencies in the teachings of Wong. Accordingly, none of the above cited references, singularly or in combination, teach or suggest the subject matter of independent claims 1, 13, 20, and 34, or in the claims dependent from these independent claims. Applicants respectfully submit that, in view of the above amendments and remarks, the application is now in condition for allowance. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully requested.

Respectfully submitted,

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